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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,569	05/17/2006	Carsten Pabst	R.306941	5499
2119 7590 05/26/2009 RONALD E. GREIGG GREIGG & GREIGG P.L.L.C. 1423 POWHATAN STREET, UNIT ONE ALEXANDRIA, VA 22314				
EXAMINER				
JACOBS, TODD D				
ART UNIT		PAPER NUMBER		
3746				
MAIL DATE		DELIVERY MODE		
05/26/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/579,569

Applicant(s)

PABST ET AL.

Examiner

TODD D. JACOBS

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11, 13, 14, 16-18, 20, 22, 26 and 28-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11, 13, 14, 16-18, 20, 22, 26 and 28-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to the amendment of 3/2/2009. Note that in making the below rejections, the examiner has considered and addressed each of the applicant's arguments/amendments.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 11, 13-14, 16-18, 20, 22, 26, 28-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Lines 8 and 11 of claim 11 both reference "a low-pressure conduit" and it is unclear if these are the same conduit, and lines 9 and 13 both reference "a high pressure conduit" and it is unclear if these are the same conduit. For the purposes of this examination, it will be interpreted that the two low-pressure conduits are *not* the same and the two high-pressure conduits are *not* the same.

5. Claims 14, 16, 17 each state "**in the range of** approximately 30°", "**in the range of** approximately 90°" or "**in the range of** approximately 150°", however it is not clear if the given number is supposed to be a range or a specific degree because of the language "in the range of". For the purposes of this examination, the above will be interpreted as "approximately 30°", "approximately 90°", or "approximately 150°".

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 11, 13-14, 16-18, 20, 22, 26, 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,446,435 to Willmann et al. (Willmann et al.) in view of U.S. Patent 6,065,816 to Nakazawa (Nakazawa).

In Reference to Claim 11

Willmann et al. teach a multipiston pump (see figure 4), having a pump housing (the pump bores are contained in a housing), a motor (motor (48)), and an eccentric unit driven by the motor (cam element (70)), having an arrangement comprising a plurality of piston pumps (see figure 4), which are combined hydraulically by means of connecting conduits in the pump housing (the conduits are also contained in the pump housing) into first and second pump units (the first pump unit contains brake circuit I, while the second pump unit contains brake circuit II) to supply two hydraulically separate hydraulic circuits with pressure fluid (see figure 1), the low-pressure sides of the piston pumps in the first pump unit being connected hydraulically to one another by a low-pressure conduit (for instance, the conduit from input numeral I and straight to the chamber at 30°) and the higher pressure sides of the piston pumps in the first pump unit being connected hydraulically to one another by a high-pressure conduit (for instance, the conduit from the chamber at 30° to the output numeral I), the low-pressure sides of the piston pumps in the second pump unit being connected hydraulically to one another by a **second** low-pressure conduit (for instance, the conduit from the input numeral II and straight to the chamber at 240°) and the higher pressure sides of the piston pumps in the second pump unit being connected hydraulically to one another by a **second** high-pressure conduit (for instance, the conduit from the chamber at 240° to the output numeral II), and the eccentric unit and the arrangement of piston pumps being adapted structurally to one another in the pump housing

such that the piston pumps of one pump unit are always actuated in alternation with the piston pumps of the second pump unit (the pumps in unit I are the pumps that are offset by 30°, 150°, and 270°, which actuate alternatively with the pumps from unit II, which are offset by 0°, 120°, and 240°) with a phase offset between the actuation of the piston pumps of one pump unit (the pumps in a single unit are offset from each other by the 120° angle of offset between them) on the one hand and the actuation of the two pump units on the other hand (the pumps in one unit are offset from the pumps in the other unit by 30°), so that the intake phases of at least two piston pumps overlap (see figure 4 where both the pump offset by 240° and the pump offset by 270° are being actuated at the same time by the cam), without the piston pumps being in phase opposition to one another (they are both in their intake stroke).

Willmann et al. fail to teach that the two pump units are actuated by two separate cams, or that the two pump units are located in two separate planes of the pump housing.

Nakazawa teaches a similar, dual pump unit, where the eccentric unit comprises at least two axially spaced apart cams (35 and 57) and wherein the piston pumps are located in a number of sectional planes of the pump housing that correspond to the number of cams with the axial spacing of the cams being essentially equivalent to the axial spacing of these sectional planes (see figure 1, where pumps (24 and 25) are axial spaced along with the cams, and are located in two axially spaced planes); and wherein the connecting conduits of the pump units being located in a region of the pump housing defined by the sectional planes (see figure 1, where the connecting inlet passages and radial passages (49, 46) intersect the planes of the pump bodies). It would have been obvious to one of ordinary skill in the art at the time of invention to form the individual brake circuits (I, II) of Willmann et al. in two separate planes of the pump housing, with two separate cams, as taught by Nakazawa, in order to lessen the amount of wear on the cam. In the arrangement of Willmann et al., a single cam must actuate

six pistons, while in the apparatus as modified by Nakazawa a single cam would only actuate three pistons.

Note that Willmann et al. as modified by Nakazawa teach the multipiston pump (see the rejection above), wherein at least one of the piston pumps, combined hydraulically into a pump unit, is actuated by a different cam from the respective other piston pumps of the corresponding pump unit (the piston pump that is offset by 0° is actuated by a separate cam than the corresponding pump, which is offset by 30°, of the corresponding pump unit).

In Reference to Claims 13, 30

Willmann et al. as modified by Nakazawa teach the multipiston pump in accordance with claim 11 (see the rejection of claim 11 above), further comprising a rotary angle spacing in the range of between 110° and 130°, preferably of 120° between two successively actuated piston pumps of a pump unit (the pumps of pump unit I are offset by 120°, see figure 4 of Willmann et al.).

In Reference to Claim 14

Willmann et al. as modified by Nakazawa teach the multipiston pump in accordance with claim 11 (see the rejection of claim 11 above), wherein the rotary angle spacing between successive actuations of two piston pumps is in the range of approximately 30° or in the range of approximately 90° (the angle between pumps is either 30° or 90°, see figure 4 of Willmann et al.).

In Reference to Claim 16

Willmann et al. as modified by Nakazawa teach the multipiston pump in accordance with claim 13 (see the rejection of claim 13 above), wherein the rotary angle spacing between successive actuations of two piston pumps is in the range of approximately 30° or in the range

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of approximately 90° (the angle between pumps is either 30° or 90°, see figure 4 of Willmann et al.).

In Reference to Claim 17

Willmann et al. as modified by Nakazawa teach the multipiston pump in accordance with claim 14 (see the rejection of claim 14 above), but do not teach that the cams are spaced by an angle.

However, Nakazawa teaches that the cams are angularly spaced by 180°, see figure 1, which is in the range of approximately 150°. It would have been obvious to one of ordinary skill in the art at the time of invention to space the cams of Willmann et al. by 180° as taught by Nakazawa in order to balance the forces acting on the motor shaft.

In Reference to Claim 18

Willmann et al. as modified by Nakazawa teach the multipiston pump in accordance with claim 11 (see the rejection of claim 11 above), wherein each cam of the eccentric unit drives at least two piston pumps (each cam would drive three piston pumps).

In Reference to Claim 20

Willmann et al. as modified by Nakazawa teach the multipiston pump in accordance with claim 11 (see the rejection of claim 11 above), wherein the piston pumps that are combined into a pump unit are located spatially immediately adjacent one another in the pump housing (the pumps associated with a single pump unit are located immediately adjacent one another in a circle formed about the motor shaft).

In Reference to Claim 22

Willmann et al. as modified by Nakazawa teach the multipiston pump in accordance with claim 13 (see the rejection of claim 13 above), wherein the piston pumps that are combined into a pump unit are located spatially immediately adjacent one another in the pump housing (the

pumps associated with a single pump unit are located immediately adjacent one another in a circle formed about the motor shaft).

In Reference to Claim 26

Willmann et al. as modified by Nakazawa teach the multipiston pump in accordance with claim 11 (see the rejection of claim 11 above), wherein one piston of at least one of the piston pumps is embodied as a stepped piston (Willmann et al.'s pistons are stepped pistons (68)) and defines two pressure chambers each (annular chamber (76) and displacement chamber (74), see figure 2), which are of variable volume in phase opposition to one another (See Willmann et al. columns 5-6 lines 58-9).

In Reference to Claim 28

Willmann et al. as modified by Nakazawa teach the multipiston pump in accordance with claim 20 (see the rejection of claim 20 above), wherein one piston of at least one of the piston pumps is embodied as a stepped piston (Willmann et al.'s pistons are stepped pistons (68)) and defines two pressure chambers each (annular chamber (76) and displacement chamber (74), see figure 2), which are of variable volume in phase opposition to one another (See Willmann et al. columns 5-6 lines 58-9).

In Reference to Claim 29

Willmann et al. as modified by Nakazawa teach an electrohydraulic vehicle brake system, having an external-force-actuated service brake (the brake actuated by the floating piston (16) of Willmann et al.) and a muscle-force-actuated emergency brake (the brake actuated by the foot brake pedal (18) of Willmann et al.), each with two brake circuits the improvement wherein the service brake is equipped with a multipiston pump as defined claim 11 (see the rejection of claim 11 above).

Response to Arguments

8. Applicant's arguments filed have been fully considered but they are not persuasive. Applicant argues that in claim 1, the combination of Willmann/Nakazawa is not valid. However, examiner disagrees because what Nakazawa teaches are two pumping systems (24, 25) that are not reciprocated by the same cam, but have two cams on different planes to move the different pumping systems. Willmann teaches two pumping systems reciprocated by the same cam, however, with Nakazawa's teaching, that is, splitting two pumping systems to two planes reciprocated by two different cams, these pumping systems will by split, reciprocated by two different cams and sit on different planes. Note further that since the rejection was made as Willmann in view of Nakazawa, not all of the irrelevant details are being added to Willmann, making the final portion of arguments moot.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TODD D. JACOBS whose telephone number is 571-270-5708. The examiner can normally be reached on Monday - Friday, 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on 571-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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3746

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